

Enabling ONC-compliant interoperability for Elation EHR with an end-to-end FHIR solution



Elation

4 months

saved in the ONC certification timeline

400% faster

data synchronization, enabling real-time care coordination and advanced analytics

Project summary

Elation Health, a U.S. primary care EHR platform serving thousands of clinicians, partnered with Edenlab to map its proprietary data model into HL7 FHIR and achieve ONC certification under the 21st Century Cures Act.

Edenlab provided turnkey support across all stages, including FHIR solution design, implementation, and third-party testing. We helped the company achieve ONC certification three times faster than the market average while strengthening the EHR's interoperability and performance.

Location
U.S.

Partnership period
9 months

Industry
Healthcare

Client type
IT Vendor

Associated services

Health data exchange regulatory compliance Interoperability

HL7 FHIR solution development services

Healthcare data platform development EHR software development

Healthcare data migration services



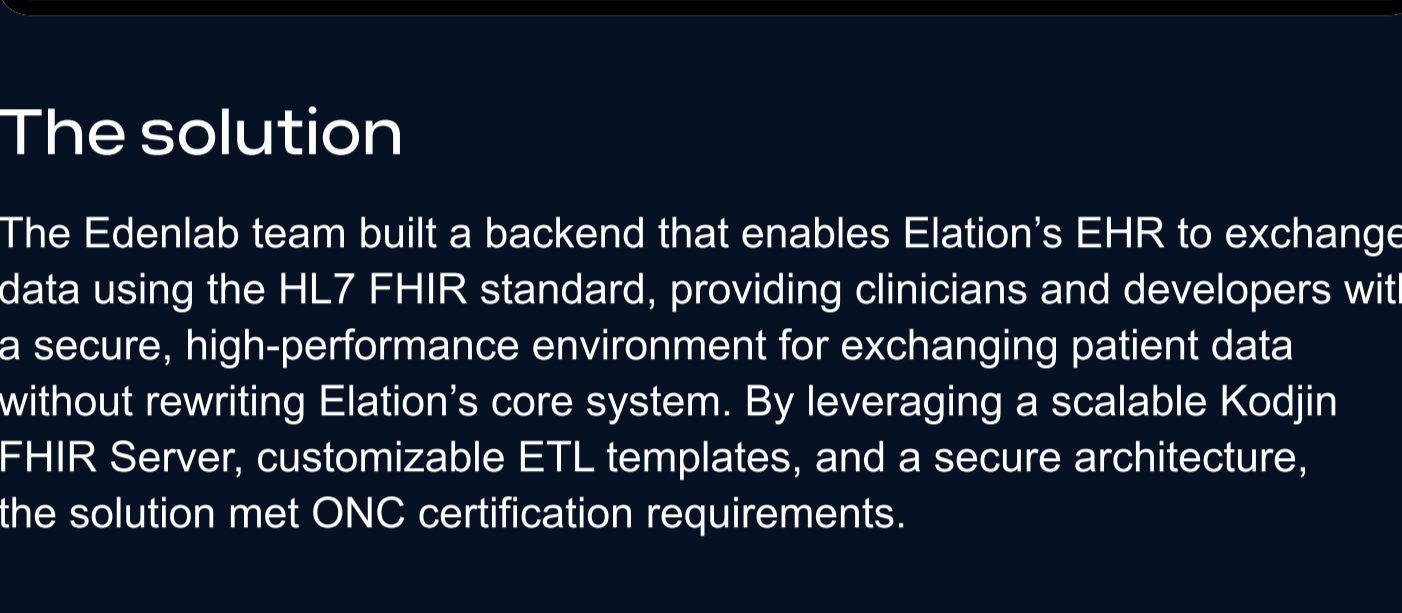
The team's technical and healthcare expertise was incredibly valuable, and they shared it openly with our team. This contributed significantly to the project's overall success.

Troy Schuettrumpf
VP Platform Engr at Elation Health

Business goal and challenge

Elation Health needed to comply with the U.S. 21st Century Cures Act's FHIR mandate while preserving the clinician-first experience of its EHR platform, which serves a nationwide network of providers.

Their existing data structure wasn't FHIR-compliant, and rewriting the platform was not viable, so they sought a scalable solution to map legacy data to FHIR resources aligned with US Core profiles, enable secure interoperability (including SMART on FHIR apps), and maintain high-performance access for clinicians.



The solution

The Edenlab team built a backend that enables Elation's EHR to exchange data using the HL7 FHIR standard, providing clinicians and developers with a secure, high-performance environment for exchanging patient data without rewriting Elation's core system. By leveraging a scalable Kodjin FHIR Server, customizable ETL templates, and a secure architecture, the solution met ONC certification requirements.

Key features of the solution for ONC compliance include:

- Scalable FHIR server**
Uses **Kodjin FHIR Server** as a high-performance clinical data store, ensuring quick and accurate retrieval of standardized patient data.
- Real-time data mapping**
Provides a custom ETL pipeline with templates aligned to US Core profiles and a mapping registry, ensuring seamless transformation of EHR data into FHIR resources and real-time synchronization across systems.
- SMART on FHIR functionality**
Includes out-of-the-box SMART on FHIR capabilities, allowing trusted third-party applications to connect securely.

Benefits for end users (specialty practices):

- Regulatory compliance**
Quickly meet 21st Century Cures Act requirements.
- Secure third-party integration**
Connect billing, telehealth, care coordination, or analytics apps while maintaining stringent authorization and authentication.
- Real-time data exchange**
Enable high-performance synchronization of patient data across systems for seamless care coordination and analytics.
- Future-proof interoperability**
Ensure data remains compatible with evolving FHIR standards, supporting long-term innovation.

ONC certification support:



Readiness assessment

Assessed existing interoperability capabilities and identified gaps against ONC §170.315(g)(10) requirements.



Certification roadmap

Defined testing scope, documentation package, and milestones for third-party testing and certification.



Pre-certification testing

Internally validated FHIR API endpoints and conducted authentication, authorization, and performance testing to ensure certification readiness.



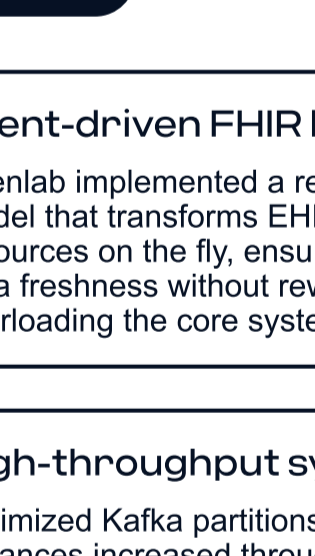
Third-party coordination

Guided Elation Health through Inferno testing and coordination with ONC-authorized testing and certification bodies.



Successful validation

Achieved a 100% first-pass rate across all FHIR API, authentication, and authorization tests.



Edenlab's innovation

Edenlab engineered a future-proof FHIR architecture designed not just to pass certification, but to perform reliably under real-world clinical loads. The system combines event-driven data streaming, real-time mapping, and modular FHIR components to make interoperability practical at scale.

Challenges

Legacy EHR architecture

Exposing FHIR APIs would normally require a costly core system redesign.



Solutions

Event-driven FHIR layer

Edenlab implemented a real-time streaming model that transforms EHR events into FHIR resources on the fly, ensuring compliance and data freshness without rewriting or overloading the core system.

High performance under clinical load

The initial event stream throughput (~300 RPS) risked bottlenecks in production use.



High-throughput system design

Optimized Kafka partitions and parallel ETL instances increased throughput to an average of 840 RPS, with peaks of up to 1,160 RPS, ensuring responsiveness even during heavy workloads.

Maintaining data integrity and security

Real-time integration with patient data required strong protection and reliable access for external apps.



Isolated and secure cloud architecture

The FHIR backend runs in an isolated AWS Kubernetes cluster with one-way Kafka MirrorMaker streaming to prevent reverse data flow. Built-in SMART on FHIR capabilities support secure third-party app connectivity through OAuth-based authentication and authorization, ensuring interoperability while maintaining strong privacy protections.

Keeping data consistent across EHR and FHIR systems

Continuous updates in the EHR made it difficult to keep FHIR data synchronized.



Real-time mapping registry and custom ETL

Edenlab built an ETL pipeline that reads events from the EHR stream, transforms them into FHIR resources and maintains a mapping registry between EHR data and corresponding FHIR resources.

Business value delivered

Edenlab helped Elation Health meet U.S. interoperability mandates without rewriting its core EHR. Through a collaborative effort spanning analysis, architecture, development, and implementation, the team delivered a secure, FHIR-compliant backend on time and on budget.

01

Accelerated certification with zero rework

Edenlab guided Elation Health through the entire ONC certification process, from planning to third-party testing, helping the company avoid months of rework and cost overruns, cutting the certification timeline to one-third of the industry average. The FHIR APIs passed testing on the first attempt.

02

Built for real-world interoperability

Instead of designing a solution solely for compliance, Edenlab engineered an architecture that performs reliably in production. The system supports continuous, secure data exchange under real clinical load, enabling true interoperability between Elation and the wider healthcare ecosystem.

03

Future-proof foundation for evolving standards

By implementing support for US Core 5.0.1 and a flexible data mapping structure, Edenlab ensured that Elation's FHIR platform can easily adapt to new regulatory requirements and data formats without costly redevelopment.

More success stories

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Healthcare Governmental agencies Ukraine

National E-Health system

The E-Health system is one of the world's largest HL7 FHIR projects in production, with over 36.5 million users.

[Learn more](#)

Healthcare Payers & TPAs Hong Kong

FHIR-based claims auto-adjudication engine

An auto-adjudication engine was built for one of the largest TPAs in Hong Kong to automate claims processing for all the major health insurance companies in Hong Kong.

[Learn more](#)

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